

Uncontrolled Flow

of

Kapoho State No. 1
Geothermal Well

October 2-3, 1982

Chronology of Events

October 2, 1982

Approximately

- 4:00 am Mr. Jere Denton, Thermal Power Co., called Manabu Tagomori at home to report that Kapoho State No. 1 is flowing uncontrolled. Flow began at 2:55 am. No further information was available but the Joint Venture (Thermal Power, AMFAC, and Dillingham) will be sending representatives to Puna on the first flight out of Honolulu.
- 6:00 am State team headed by Mr. Susumu Ono mobilized and left Honolulu for Puna. Team members besides Mr. Ono included Mr. Melvin Koizumi, Deputy Director, Dept. of Health; Messrs. Manabu Tagomori, Dan Lum, and Edwin Sakoda of DOWALD.
- 6:45 am State team met with Joint Venture representatives at the Hilo Airport for a short briefing by Mr. Jere Denton prior to visiting the well site.
- 8:00 am Well inspected and flow determined by Joint Venture to be in stable condition (not getting worse) and confined to cellar.
- 9:30 am State and Joint Venture representatives met at the State Office Building in Hilo to map out steps to be taken to stop the flow and to inform the public. The Health Department offices were used as the communication center.
- 12:00 noon Joint Venture representatives issued a press release through the local media.
- 3:00 pm Governor Ariyoshi visited site and was briefed by Susumu Ono, Jere Denton (Thermal Power Co.), Ralph Patterson (Dillingham), and George St. John and John Humme (AMFAC). Flow remained in stable condition.
- 7:00 pm State, County, and Joint Venture representatives met for an update report. Attempts by Thermal Power Co. to stop the flow were terminated for the day.

October 3, 1982

- 8:00 am Work on fabricating special equipment was underway at the adjacent Kapoho State No. 2 site.
- 10:00 am A by-pass piping was hooked up to the well. About 85% of steam funneled through piping. Steam yet too great in cellar to get a good look at the flow point.

October 3, 1982 (continued)

12:00 noon	Helicopter brought in to fan steam in certain direction to allow workmen to open main valves.
2:00 pm	Succeeded in venting steam through main valves; the break located. A 3-inch valve broke-off and flow was discharging through the stem.
3:00 pm	Attempt to weld a plug in the 3-inch opening failed.
5:20 pm	The 3-inch valve was retrieved from the cellar floor and reinstalled in place. Valve closed and the main valves were then closed, shutting down the uncontrolled flow of Kapoho State No. 1 which flowed for $38\frac{1}{2}$ hours.



KAPOHO STATE No. 1
UNCONTROLLED FLOW
OCT. 2-3, 1982

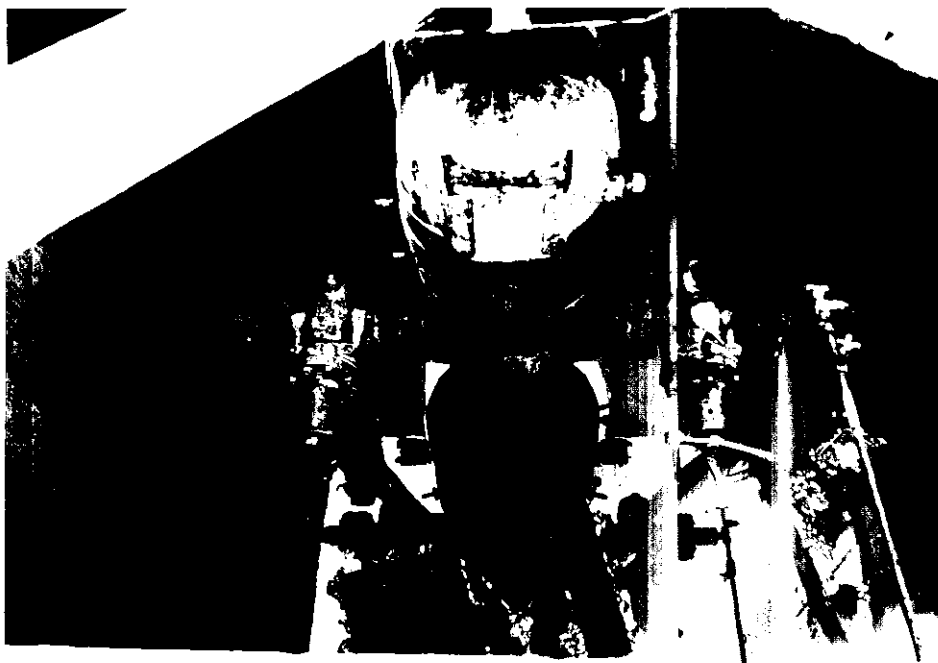
View from gravel roadway
leading to Kapoho State
No. 1 well site.



View from Kapoho State
No. 2. HGP-A in
background.



Initial attempt to locate
valve. Visibility
obstructed by steam.



Kapoho State No. 2
3" valve assembly.



3/4" pressure gage
piping and connection
to 3" valve.



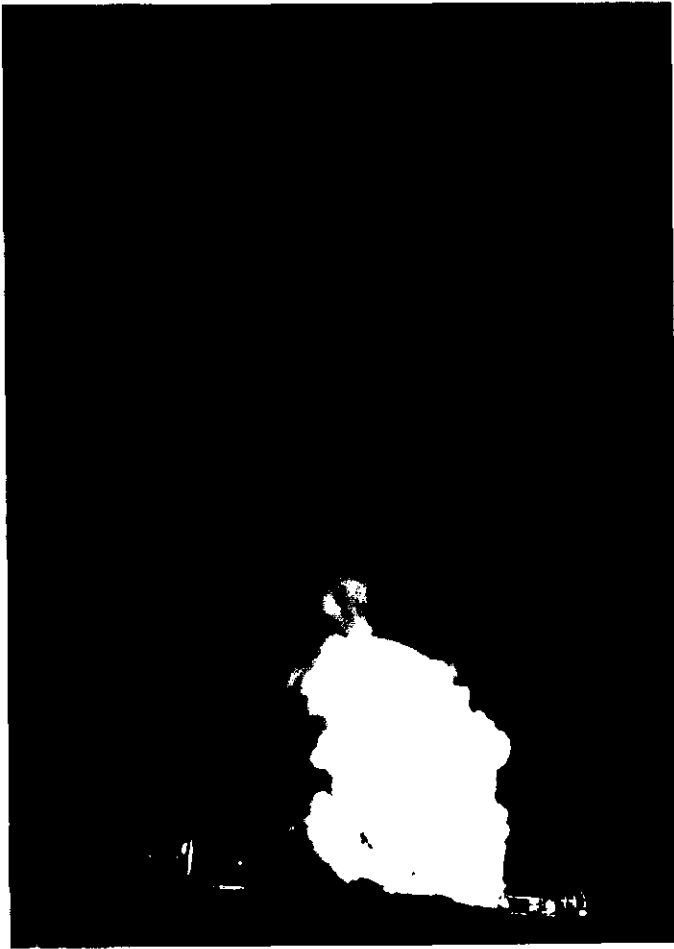
Kapoho State No. 1
Close-up of broken
pipe connection to
pressure gauge.



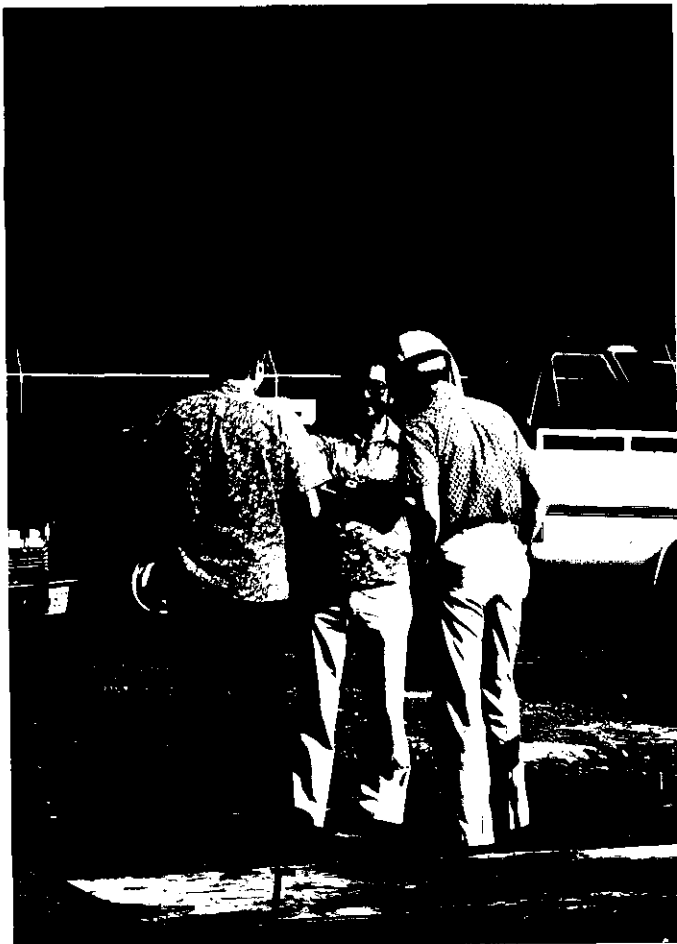
Governor's Inspection, 3:00 pm, October 2, 1982.
Arrival by helicopter.

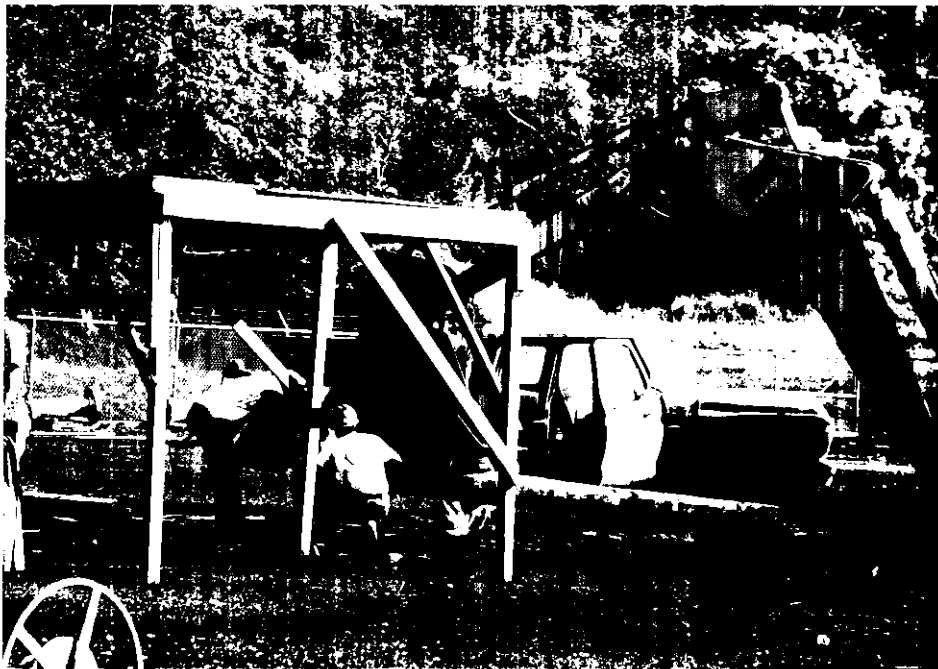


Susumu Ono and Governor Ariyoshi. Briefing by
Ralph Patterson of Dillingham and Jere Denton of Thermal Power.



Evening of October 2, 1982. Work terminated for the evening.





STEAM DIVERTER:

Fabrication



Placement



Adjustment



Adjusting for maximum
diversion of steam .



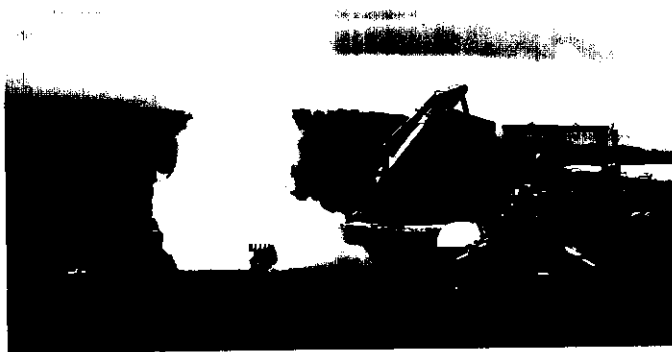
Helicopter used as fan
to blow away steam
from well head .



Opening the main valve.



Well venting through both
main valve and uncontrolled
opening.





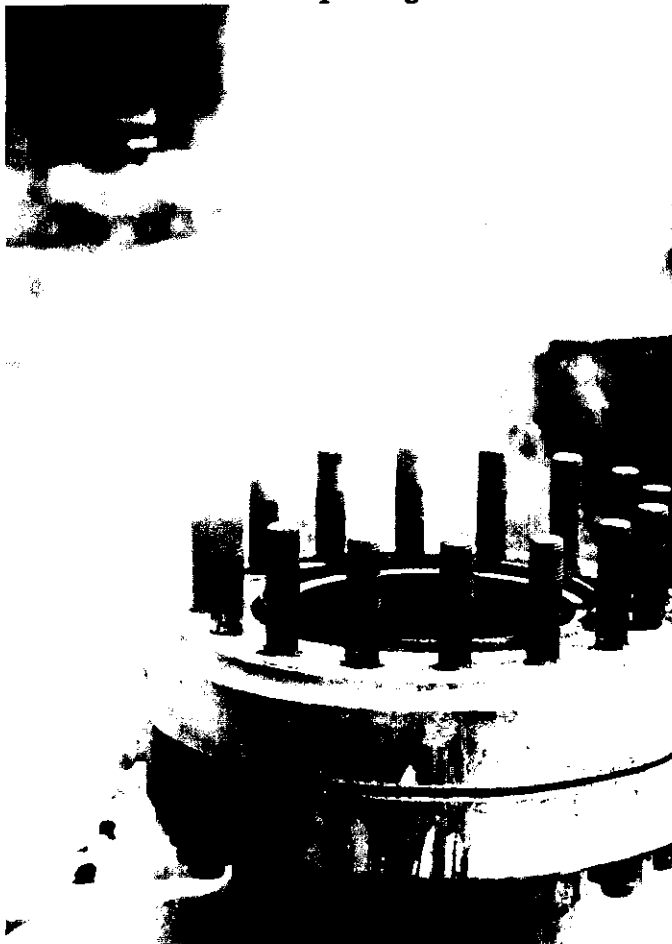
Fire-fighting suits borrowed through Civil Defense.



Yellow fan used to blow steam away from work area.



Main Opening

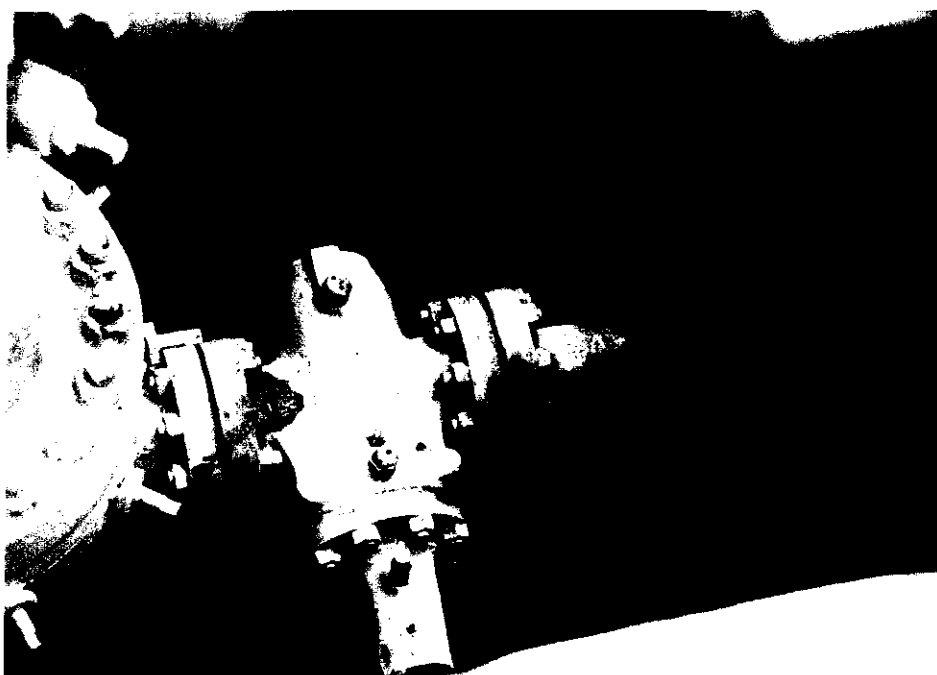


Uncontrolled Opening

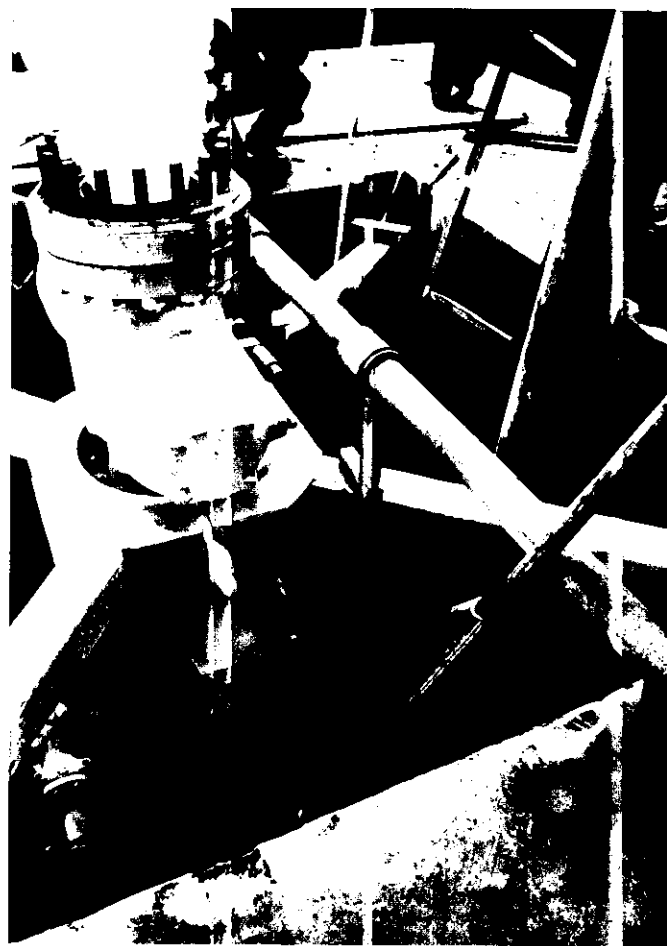




Uncontrolled opening .



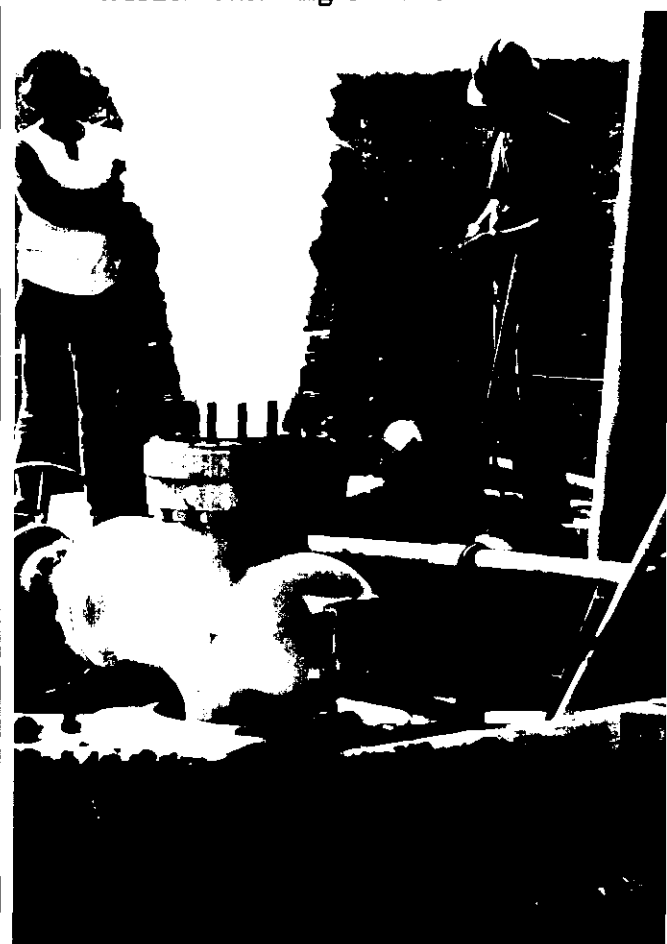
Auxiliary valve
below opening .



Attempting to plug the opening.



Welder entering cellar.





Inserting metal plug.



Welding plug.

Steam News from Leak at Puna Well

By Llewellyn Stone Thompson
Big Island Correspondent

PORRUA ROAD, Puna, Hawaii — The Kapoho State No. 1 geothermal well developed a leak early this morning, shooting a plume of steam about 150 feet into the air.

There were no injuries and no immediate danger to nearby residents, authorities said.

The leak in the well, which is not "on line" — not producing electricity — was first detected at 2:45 a.m. by a security guard on duty at the nearby Kapoho State No. 2 well, about 1,500 feet from well number one.

A large quantity of geothermal steam was being released. The plume rose high into the air then was blown horizontally towards Kapoho.

The leakage was confirmed by Albert Nakaji, consultant for Thermal Power Co., one of three companies involved in a joint venture which owns the well.

Preparations were being made this morning to stop the leakage and a cleanup crew was being flown to the Big Island to evaluate the situation, Nakaji said.

Thermal Power Co. is a subsidiary of the National City of San Francisco, which is also involved in developing the Geysers geothermal field in northern California.

The company is producing 10 percent of the state's geothermal power.

Geothermal Well Develops a Leak

Continued from Page One
Venture which owns Kapoho state number one and Kapoho state number two wells.

The other two partners in the venture are Dillingham Corp. and Amfac Inc.

Nakaji said a security guard is regularly stationed at the well sites at night.

Officials have been concerned in the past about possible sabotage of the Kapoho wells and the nearby HGP-A geothermal power plant operated by Hawaii Electric Light Co. because of some opposition to geothermal development by area residents.

By sunrise today, no one had apparently been close enough to determine the cause of the leak.

The well had been capped and the leakage did not indicate that the cap had been removed, officials said.

Police said they were not notified of the leakage until shortly before 6 a.m. Police, firemen and Civil Defense Director Harry Kim were at the gate to the well site by 7 a.m.

Kim said firemen were sent as a precaution in case of a need to evacuate the area, but he dismissed the firemen about 7:15 when it was determined that there was no immediate danger.

KIM SAID AIR samples were taken this morning and showed there was no increase in pollutants in the immediate vicinity.

No hydrogen sulfide gas odors could be detected at the gate to the site, about a quarter-mile from the leaking well.

Winds were blowing the large plume of steam northeast towards Kapoho, away from the adjoining Leilani Estates subdivision.

Residents of the subdivision have been the most frequent source of complaints about geothermal emissions and noise.

Katherine Pommerenk, whose subdivision home is about a mile from the well sites, told the Star-Bulletin that she and her husband were awakened by the noise from the leakage about 3:30 a.m.

Pommerenk is a member of an anti-geothermal group, Puna Speaks, that filed a lawsuit in late August to get a temporary halt to geothermal energy production in the Puna area.

SB 10/2/82

Geothermal project lets off steam; officials report it's no health hazard

By Hugh Clark

Advertiser Big Island Bureau

POHOIKI, Hawaii — A malfunctioning valve was blamed yesterday by officials of Puna Geothermal Joint Venture for a steam leak that has caused a steam plume to shoot into the air.

Jere Denton, spokesman for the three-way partnership, said that there is no health hazard for nearby residents, although several complained to authorities about the problem.

Puna Geothermal Joint Venture is made up of Amfac, Dillingham and Thermal Power Co., a subsidiary of Natomas Co. of San Francisco.

Denton, in a brief announcement concerning the broken valve, said "all primary safety systems are intact. Monitoring of hydrogen sulfide indicates that emissions from the well do not represent a health hazard."

However, the level of emissions was not released. And neither Denton nor consultant Albert Nakaji of the Big Island was available to respond to questions about the leak.

Other sources indicated the steam plume formed shortly before 3 a.m., awakening some of the nearby residents and causing Civil Defense officials to send firemen and police to the site.

The officials left after being assured there was no safety risk. Police spokesmen in Hilo last night said there was "no danger we are aware of to anyone." There was no answer at the Puna district police station in Keaau.

Gov. George Ariyoshi, on the Big Island for a ground-breaking ceremony in Waimea, was transported to the well site by an Air National Guard helicopter for an inspection.

He asked state health depart-

ment and land and natural resources officials to continue to monitor the situation.

Denton said his company is making "every effort to stop the emissions. The steam must be diverted from the valve area before final assessment of the problem and repairs can be made."

He said "appropriate" state and county officials were apprised of the problem and that monitoring of the emissions and noise levels will continue until the problem is solved.

Passersby reported that Puna Geothermal was bringing heavy equipment through the locked gate to Kapoho State No. 1 well.

This is the well that the joint venture Aug. 3 announced would be tested. Tests were halted in December 1981 because of problems with a noise muffler.

SB/ADW 10/3/82

In Hawaii...

● Tuesday, October 5, 1982
Honolulu Star-Bulletin A-3

FBI to Aid Geothermal Leak Probe

By Llewellyn Stone Thompson
Star-Bulletin Writer

HILO — Big Island police have asked the FBI for help in trying to determine how a leak started in a geothermal well Saturday.

Two pieces of broken pipe from Kapoho State No. 1 well where the leakage began at will be sent to the FBI for examination, Big Island police said yesterday. Capt. Arthur Hoke of the Puna police said the FBI examination will take one to two months.

The Kapoho State No. 1 well near Pohoiki Road in the lower Puna district, is owned by Puna Geothermal Venture, a joint venture of the Thermal Power Co., Amfac Inc. and Dillingham Corp.

The break in the three-quarter-inch diameter pipe, which occurred about 3 a.m. Saturday, was the initial cause of the steam leakage, according to Jere Denton, project manager for the Puna Geothermal Venture.

Reports stated that through the small broken pipe caused a twisting action which tore a valve off a large pipe, which caused an even greater leakage, Denton said.

HOKE DESCRIBED one of the two pieces of pipe being sent to the FBI as about 3 feet long with threaded ends on both. The other piece of pipe, about a foot long, had an elbow fitting still attached to it, Hoke said.

Inside the elbow fitting, where a second pipe would normally be attached, only a small piece of pipe remained, Hoke said. That small piece had apparently been broken off from the threaded portion of the 3-foot length, Hoke said.

The FBI will attempt to determine whether the pipe broke from inside or from outside. Denton earlier had said he believed the breakage was evidence of "tampering."

Geothermal projects in the area have been the subject of implied threats by some community residents in the past.

The steam leakage caused by the broken pipe lasted 38½ hours and created a loud roaring sound at the site.

However, there were no injuries and authorities measured no increase in hydrogen sulfide gas near homes in the area.

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A-12

Tuesday, Oct. 5, 1982

Geothermal Energy Must Proceed

It is not clear yet whether the release of geothermal steam from a test well on the Big Island over the weekend was an accident or sabotage.

If it was the latter there must be a major effort to find and punish the perpetrator.

The question of geothermal energy development on the Big Island is becoming an emotional one, with a fairly small group of opponents standing against a project with a great potential for common good, namely a reduced dependence on oil.

There are existing procedures for compensating those who may be called on to sacrifice some holding or interest for the greater public good.

And there are existing processes to assure that geothermal development will proceed along lines that are environmentally acceptable.

We have faith that these processes will work to achieve a generally satisfactory resolution of the geothermal questions. In the meantime there must be no tolerance of those who would take the law into their own hands.

PRINTING SERVICE
P.O. Box 10022-Honolulu, Hawaii
PHONE: 734-8124
Victoria Custer Elaine Stroup

HAWAII TRIBUNE HERALD

OCT 19 1982

Geothermal company tests water for pollution

A test of water samples collected from five homes near a geothermal well that vented last month in Puna will probably not be completed for another week.

Puna Geothermal Joint Venture's No. 1 well began spewing steam from a leak about 3 a.m. Oct. 2 and was capped 39 hours later. The cause of the leak remains unknown, although law enforcement officials are investigating the possibility of sabotage by opponents of geothermal projects in Puna.

Jere Denton, a spokesman for Puna Geothermal Joint Venture, said the water samples were collected shortly after the incident to determine if any contamination resulted from the leak but as of Monday the tests were not back. He added that the results may not be back from the lab conducting the tests until next week.

The Hawaii County Police Department has sent two pieces of a broken pipe from the geothermal well to the FBI laboratory in Washington, D.C., to determine whether they were broken by some force other than steam.

The result of FBI's tests may not be known until some time in November.

The geothermal project, a joint venture of Thermal Power Co., Amfac and Dillingham, has successfully drilled two wells in the Pohoiki area. Its next move is to hire a consultant to draw a preliminary engineering plan, an environmental review, and an economic analysis, Denton said.

But before any of the studies can be done, the developers need to know whether the wells have an adequate reservoir of steam to warrant the development of a power plant, he said.

A series of tests of steam flow have been completed. "The data of the flow tests are due any day," he added.



LEAK—A broken pipe resulted in this leak Oct. 2 at Puna Geothermal Joint Venture's well No. 1 in Pohoiki. Samples of water from five homes in the area are being tested for possible pollution from the leak.

Shut down geothermal plant, anonymous caller threatens

POHOIKI, Hawaii — Big Island police opened an investigation yesterday into a complaint by Hawaii Electric Light Co. officials that an anonymous caller threatened to shut down the Hawaii HGP-A geothermal plant.

As a result of the threat, company officials said that night security will be increased around the plant.

Utility officials also called the FBI in Honolulu to notify agents of the anonymous call since the plant is owned by the federal Department of Energy.

The HGP-A is a joint county, state and federal project being operated under a special contract by Helco as a demonstration.

Helco officials told The Advertiser they were alarmed by the call in

the wake of Saturday's damage at Thermal Power's Kapoho State Well No. 1.

A pipe either broke or was intentionally damaged over the weekend, allowing steam to pour out unharassed for a day and a half. (See story on California geothermal incident, Page A-21.)

The caller ordered the plant operator to shut down the geothermal plant or "we'll stop you one way or another."

Helco immediately ordered a new telephone line for the plant and added another security guard for the late afternoon and evening periods.

Police began a "harassment" investigation and reported no leads as to the caller's identity.

A utility spokesman said his company was reluctant to discuss the threat because it could foster crank calls, but he said he also feels the public should be aware of the extremists involved in the opposition to the development.

The recent broken-pipe incident came two days after a federal court judge refused to grant an injunction to shut down the three-megawatt plant operated by Helco.

The FBI is assisting Big Island police through its Washington laboratories in analyzing the pipe from the Thermal Power well to determine why it was broken. An FBI spokesman said agents are not actively participating in the investigation of the telephoned threat.